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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,743	02/25/2004	Douglas W. Akers	B-200	6111

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EXAMINER	
PALABRICA, RICARDO J	
ART UNIT	**PAPER NUMBER**
3663	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/788,743	AKERS, DOUGLAS W.	
	Examiner	Art Unit	
	Rick Palabrica	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 November 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10,12-19 and 21-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,12-19 and 21-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. In view of the Appeal Brief filed on 11/03/2006, PROSECUTION IS HEREBY REOPENED. New grounds for rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

JACK KEITH
SUPERVISORY PATENT EXAMINER

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-10, 12-19 and 21-23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The reasons are the same as those stated in section 4 of the 10/17/05 Office action.

3. Claims 12-19 and 21-23 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The processing of positron annihilation data by Doppler-broadening algorithm and/or positron lifetime algorithm, which are critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

As presently set forth, the claims, e.g. claims 12 and 13, recite the collection and storage of prompt gamma ray data and positron annihilation data, but lack the critical processing of these data to provide the claimed evaluation of a material specimen. The prompt gamma ray data and positron annihilation data recited in the claims are output signals (counts) from the detector system. These outputs from the detector system still have to be processed by an algorithm in order to provide information, e.g., on lattice

damage. Applicant himself admits to this required data processing by algorithms using a data processor, as evidenced by the following statements in the specification:

> *"The data processing system 24 is operatively associated with the detector system 16 and receives prompt gamma ray data 20 and positron annihilation data 22 produced by the detector system 16. As was briefly described above, the data processing system processes the prompt gamma ray data 20 and positron annihilation data 22 in accordance with a positron lifetime algorithm 38. See Figure 2. So processing the prompt gamma ray data 20 and the positron annihilation data 22 results in positron lifetime data. In addition data processing system24 may also process the positron annihilation data 22 in accordance with the Doppler-broadening algorithm 40." Underlining provided. See paragraph 0042.*
>
> *"A data processing system 24 operatively associated with the detector assembly 16 processes the prompt gamma ray data 20 and positron annihilation data 22 in accordance with certain algorithms (described below) in order to produce output data that are indicative of a lattice characteristic of the material specimen 12." Underlining provided. See paragraph 0024.*
>
> *"For example, in one embodiment, the data processing system processes the prompt gamma ray data 20 and positron annihilation data 22 in accordance with a positron lifetime algorithm 38 (Figure 2) to produce lifetime data." See paragraph 0025.*
>
> *"Positron lifetime data 22 collected during the collection period corresponds to annihilation events resulting from the same events that caused the production of the prompt gamma ray. The data processing system 24 then processes the prompt gamma ray data and positron annihilation data to determine positron lifetime at step 72." See paragraph 0044.*
>
> *"As was briefly mentioned above the data processing system 24 may also utilize a Doppler-broadening algorithm 40. The Doppler-broadening algorithm 40 assesses the degree of broadening of the 511 keV peak associated with the annihilation gamma rays γ_s produced by the positron/electron annihilation event." See paragraph 0047.*

4. Claims 1-10, 12-19 and 21-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are vague and indefinite, and their metes and bounds cannot be determined. The reason is the same as that given in section 5 of the 10/17/05 Office action.

Additionally, claim 2 is vague, indefinite and incomplete as to how the recited positron lifetime data is to be calculated.

5. Claims 12-19 and 21-23 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: the processing of the positron annihilation data (e.g., see claim 12) and the prompt gamma ray data (e.g., see claim 13) to provide an evaluation of a material specimen. See also section 4 above.

Double Patenting

Claim Rejections – Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claim 2 is provisionally rejected under the judicially created doctrine of double patenting over claim 3 of copending Application No. 10/383,096. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The reason is the same as that given in section 6 of the 10/17/05 Office action, which reason is herein incorporated.

The examiner notes that the applicant agrees with this rejection.

Response to Arguments

7. In the Remarks section of his 1/13/06 Amendment, applicant traversed the rejection of claims 1-10, 12-19 and 21-23 under 35 U.S.C. 112, first and second paragraphs. Applicant's arguments have been fully considered but found not convincing.

The examiner has raised several issues regarding the sufficiency of applicant's disclosure, and has provided documentary evidence to support his reasoning. Applicant's main argument is that it would not require undue experimentation to arrive an operative embodiment of the applicant's invention. The examiner does not agree. Note that the examiner's conclusions are based on all of the evidence of this case, including the specifications and the drawings, as well as case law and the MPEP.

Applicant's claims require the use of algorithms (i.e., Doppler broadening and positron lifetime), detector(s), a neutron source, and a data processor. Thus, to enable an artisan to make and use an operative embodiment, one must first know which

particular algorithm(s) to use, and how and in what manner the data from the detectors are to be analyzed in the "data processor."

It is the examiner's position that applicant's specification basically sets forth the algorithms and data processor as "black boxes" without sufficient details of internals thereof, to enable an artisan to make and use an operative embodiment of the invention, without undue experimentation. See MPEP 2164.06 and *In re Ghiron*, 169 USPQ 723.

Note that an algorithm is a general mathematical approximation of a physical phenomenon. Different algorithms can be used to approximate the same physical event or phenomenon and, depending on the particular situation, circumstances, etc., one of these known algorithms will give a more accurate result than the others.

As an example, the specification indicates that there are different known Doppler broadening algorithms but, fails to disclose which of these known algorithms would be suitable for use in the present invention. Accordingly, due to this failure, one must resort to a trial-and-error process to determine which of the known algorithms to use and, such is considered undue experimentation.

This is especially so since all algorithms contain "constants" that are used to apply the algorithm to a "specific situation." These "constants" are based on various boundary conditions, etc., of the "specific situation" or, in mathematical terms, each of these "constants" are defined as a function of these boundary conditions, wherein different boundary conditions are given different weights and combined in a given manner (e.g., multiplied by a number (e.g., 3), squared, and then added together, etc.).

The references discussed by the examiner in sections 8 and 9 above, provide clear examples of the functional dependencies of these constants to specific conditions where these algorithms are applied.

Thus, before one can even apply a given algorithm to a "specific situation", one must first determine the mathematical equations used to determine each of the "constants" in the given algorithm.

It is the examiner's position that neither the applicant's specification nor the art of record, provides an enabling disclosure of the particular mathematical equations to be used for determining each of the different "constants" in each of the different algorithms.

It is the examiner's position that it would be undue experimentation for an artisan to utilize a trial-and-error process to go through all of the possible mathematical equations (with all of the possible weighted boundary conditions, etc.) for each of the various known different Doppler broadening algorithms and for each of the various known different positron lifetime algorithms, to finally determine which one to use in applicant's invention. The examiner's conclusions are supported by MPEP 2164.06(a) and the case law cited therein. Applicant's illustration of block diagrams labeled data processing system, Doppler broadening algorithm and positron lifetime algorithm, with no description of internals thereof, is similar to the situation in *In re Ghiron* 169 USPQ 723. Applicant's case is also considered analogous to *In re Scarbrough* 182 USPQ 298, wherein Scarbrough had a claim directed to a system of several component parts referred to by a generic name and overall ultimate function. The court concluded that there was no enabling disclosure because the specification did not describe how

"complex elements known to perform broadly recited functions in different systems would be adaptable for use in Applicant's particular system with only reasonable amount of experimentation."

While the above, by itself, is considered evidence of undue experimentation, one is still not done!

Applicant's specification on page 8 refers to some of the characteristics of the specimen that is desired for each algorithm to assess. Applicant's data processor utilizes the algorithms to process the data from the detectors and then, in some undisclosed manner, to further process the output of the algorithm to provide an indication of the presence or absence of a lattice defect and/or "localized composition changes", etc.. This indication is actually a probability of a lattice defect being present, since this is a non-destructive analysis.

If one sets the conditions too loosely, too many specimens will be inaccurately indicated as having a lattice defect. On the other hand, if one sets the conditions too tightly, the inventive system will inaccurately indicate too many specimens as not having a lattice defect when they actually do. In the art of activation analysis, where the claimed invention belongs, the boundary conditions have a profound effect on the accuracy of the results. The situation for applicant's claimed invention is similar, for example, to Schultz et al. (U.S. 5, 200,626) who disclose a method and an apparatus for detecting hidden explosives by pulsed neutron and x-ray interrogation. They teach that if the threshold level of the system is adjusted so as to detect small quantities of nitrogen, then a high false-positive rate results due to the presence of innocent nitrogen

containing materials, leading to the necessity of searching an excessive number of packages by hand. On the other hand, if the threshold level is set high to avoid false positives, then the likelihood that actual explosives will escape detection, i.e., false negatives, increases.

In addition, applicant's invention is not just the determination of the presence or absence of just a single lattice defect, which, in itself, would not provide any useful information, but rather, whether there are present enough lattice defects to cause metal and fatigue, embrittlement, etc. (as indicated in applicant's specification).

Clearly, it is undue experimentation to determine a suitable data processor for determining how and in what manner, the outputs from each of the algorithms is to be processed so as to provide a reasonably accurate non-destructive determination as to whether or not the specimen in question has sufficient lattice defects to be of concern (as indicated in applicant's specification). Note that this is in addition to determining which of the several known Doppler broadening algorithm and which of the several positron lifetime algorithms should be used after going through a trial-and-error process involving different mathematical equations with different weighted boundary conditions, as already set forth above.

However, one is still not done!

The only way to determine whether or not the "chosen" specific Doppler broadening algorithm, and/or the "chosen" specific positron lifetime algorithm, the "chosen" manner of further manipulating or analyzing the output of the algorithm, actually provides a reasonable determination of the presence of enough lattice defects

to be of concern, is by doing a further analysis of the specimen (such as a destructive testing/analysis) to determine the actual quantity of said lattice defects present and noting how closely the result of this actual testing/analysis correlates to the result from applicant's non-destructive analysis.

Further, to obtain reasonable statistical analysis, one would have to do this for a plurality of specimens. Clearly, such would present undue experimentation.

Additionally, applicant has some claims that require the presence of both a Doppler broadening algorithm and/or a positron lifetime algorithm, and which require the data processor in some undisclosed manner to combine the outputs of these algorithms to indicate a lattice defect.

First, the appropriate algorithm has to be selected from a plurality of available algorithms that applicant himself admits and as taught by the references cited by the examiner in the previous Office action. This selection has to be performed for each of the Doppler broadening algorithms and each of the positron lifetime algorithms.

Next, the results of applying the algorithms have to be combined in order to produce an output data indicative of the presence or absence of a lattice defect. Since applicant has refused to disclose how these algorithms have to be combined, an artisan will have to determine by trial-and-error that may include hundreds or thousands of possible combinations, starting, for example, with 5% Doppler and 95% positron lifetime and up to 95% Doppler with 5% positron lifetime. Additionally, for each selected combination, the plurality of constants inherently associated with each selected algorithm has to be evaluated.

Then, the results of these hundreds or thousands of possible combinations must be compared to the results from the above referred to as "destructive testing/analysis" of each specimen to determine the manner of combining.

Additionally, applicant's specification on page 14 states that both the positron lifetime algorithm and Doppler broadening algorithm, each requires two detectors . The specification on page 20 also states that a single detector is used. Applicant's disclosure is thus clearly insufficient and non-enabling as to which specific known positron lifetime algorithm can be used with only a single detector and, which specific Doppler broadening algorithm can be used with only a single detector.

Applicant shows in Fig. 2 that there is feedback between the data processing system and each one of the elements, Doppler broadening algorithm and/or positron lifetime algorithm. This feedback is indicated in Fig. 2 as double-headed arrows between the data processing system and each of the two algorithms. There are no details in the specification of how the parts should be interconnected, timed and controlled so as to obtain the specific operations desired by the applicant (see, for example, *In re Gunn* 190 USPQ 402, 406). Additionally, there is no discussion as to what factors comprise the feedback for each one of the three specific elements, when such feed back occurs, whether or not feedback to one algorithm also comes from the other algorithm, etc. This feedback arrangement provides further proof of necessary modification, consistent with the issue previously raised by the examiner. If no modification of results were required, applicant would not have indicated this feedback mechanism in his disclosure.

Applicant argues that his disclosure is enabling because the level of disclosure provided in his application is the same as those in Akers (U.S. 6,178,218) or Alex (U.S. 4,064,438). The examiner disagrees.

First, the issuance of the cited patents is not dispositive of the issues raised by the current examiner because his issues are different from those raised by another examiner who examined the application for the cited patents.

Second, the Doppler broadening algorithm in Akers (U.S. 6,178,218), is not modified by feed back from the data processing system and/or possibly the positron lifetime algorithm, unlike the instant application.

Third, as to Alex, his technique is completely different from the applicant's. He does not employ any positron lifetime algorithm or Doppler broadening algorithm in his invention to obtain indication of defects in specimens. Rather, the actual radioactivity-related measurements from the samples are compared with previously prepared reference standards. For example, Alex's non-destructive method for detecting hydrogen embrittlement develops energy distribution curves of gamma ray measurements from various classes of known levels of hydrogen embrittlement, to be utilized as reference standards to indicate the stage of unknown embrittlement within a specimen under examination (see col. 3, lines 55+).

Applicant also argues that his written description is enabling because: a) the positron lifetime algorithm is described in paragraphs 0043-0046; and, b) the Doppler broadening algorithm is described in paragraphs 0047-0049. The examiner disagrees.

The cited paragraphs merely mention either the use or desired result from using the algorithms, which are completely different from "describing the algorithm."

As to applicant's argument that the disclosure of the instant application is at the same level as the disclosure in a related patent application (S/N 10/269,807) that a previous Board found to be sufficient, the additional evidence herein presented by the examiner to further support his position were not available to said Board.

In summary, the examiner has demonstrated above that applicant's disclosure is insufficient and non-enabling, and that undue experimentation would be required by an artisan to make and use an operative embodiment of applicant's claimed invention. The examiner's position is supported by the following sections of the MPEP and the case laws cited therein.

> **2164.06(a) Examples of Enablement Issues-Missing Information**
>
> "It is common that doubt arises about enablement because information is missing about one or more essential parts or relationships between parts which one skilled in the art could not develop without undue experimentation.
>
> **I. ELECTRICAL AND MECHANICAL DEVICES OR PROCESSES**
>
> For example, a disclosure of an electrical circuit apparatus, depicted in the drawings by block diagrams with functional labels, was held to be nonenabling in *In re Gunn*, 537 F.2d 1123, 1129, 190 USPQ 402, 406 (CCPA 1976). There was no indication in the specification as to whether the parts represented by boxes were "off the shelf" or must be specifically constructed or modified for applicant's system. Also there were no details in the specification of how the parts should be interconnected, timed and controlled so as to obtain the specific operations desired by the applicant.
>
> *In re Ghiron*, 442 F.2d 985, 169 USPQ 723 (CCPA 1971), involved a method of facilitating transfers from one subset of program instructions to another which required modification of prior art "overlap mode" computers. The Board rejected the claims on the basis, *inter alia*, that the disclosure was insufficient to satisfy the requirements of 35 U.S.C. 112, first paragraph and was affirmed. The Board focused on the fact that the drawings were "block diagrams, i.e., a group of rectangles representing the elements of the system, functionally labeled and interconnected by lines." 442 F.2d at 991, 169 USPQ at 727. The specification did not particularly identify each of the elements represented by the blocks or the relationship therebetween, nor did it specify particular apparatus intended to carry out each function.

> An adequate disclosure of a device may require details of how complex components are constructed and perform the desired function. The claim before the court in *In re Scarbrough*, 500 F.2d 560, 182 USPQ 298 (CCPA 1974) was directed to a system which comprised several component parts (e.g., computer, timing and control mechanism, A/D converter, etc.) only by generic name and overall ultimate function. The court concluded that there was not an enabling disclosure because the specification did not describe how "complex elements known to perform broadly recited functions in different systems would be adaptable for use in Applicant's particular system with only a reasonable amount of experimentation" and that "an unreasonable amount of work would be required to arrive at the detailed relationships applicant says that he has solved." 500F.2d at 566, 182 USPQ at 302.
>
> **2164.06 Quantity of Experimentation - 2100 Patentability**
>
> II. EXAMPLE OF UNREASONABLE EXPERIMENTATION
>
> In *In re Ghiron*, 442 F.2d 985, 991-92, 169 USPQ 723, 727-28 (CCPA 1971), functional "block diagrams" were insufficient to enable a person skilled in the art to practice the claimed invention with only a reasonable degree of experimentation because the claimed invention required a "modification to prior art overlap computers," and because "many of the components which applicants illustrate as rectangles in their drawing necessarily are themselves complex assemblages . . . "

8. In his 11/03/06 Appeal Brief, Appellant alleges that the examiner's rejections are on the same issues that the Board has already decided, i.e., on S/N 10/269,807. The examiner disagrees because: a) that Board did not have the benefit of evaluating the additional evidence presented by the examiner herein; b) that Board clearly stated in its opinion that its decision, "is **NOT binding** precedent of the Board."

Appellant's repetitious arguments can be succinctly summarized as follows:

a) examiner's rejections are based on limitations that are not part of the claims, similar to the case of *Ex parte Lemelson* (e.g., see pages 15, 16, 17, 18, 20 and 21);

b) no undue experimentation is required to implement the algorithms because they are well known in the art (e.g., see page 20);

c) the level of detail in the specification is greater than a previously issued patent in the same field and therefore enabling (e.g., see page 21);

d) the disclosure is enabled for one detector because the specification notes two detectors (e.g., see page 22).

As to argument a), the specific allegations of the appellant are as follows:

- "None of the claims require the use of a data processor or positron lifetime algorithm" (see, e.g., pages 15, 18 and 21).
- "None of the claims require combining Doppler and positron lifetime algorithm" (see, e.g., page 16).
- "Feedback arrangement between data processing and algorithms 30, 40 is not claimed" (see, e.g., page 17, 20)

The examiner disagrees. As stated, e.g., in section 3 above, appellant's claimed method of evaluating a material specimen requires the use of algorithms (i.e., Doppler broadening and/or positron lifetime), detector(s), a neutron source, and a data processor. Appellant does not disclose any other alternative method of performing the material evaluation that does not require these four elements.

On the matter of the processor and the positron lifetime algorithm, both are required to calculate the positron lifetime data, as recited in claim 2, as evidenced by the following statement in the specification:

> "*As was briefly described above, the data processing system 24 processes the prompt gamma ray data 20 and positron annihilation data 22 in accordance with a positron lifetime algorithm 38." Underlining provided. See paragraph 0042.*

Also, the specification does not disclose, suggest or even hint of any other means to calculate said positron lifetime data other than by a positron lifetime algorithm. Appellant's repetitive insistence that a positron lifetime algorithm is not required to calculate the positron lifetime, implies there must be some other undisclosed means for calculating this data. In this case, the claims would still be rejected under 35 U.S.C. 112, first paragraph, because the best mode contemplated by the inventor has not been disclosed.

As to the citation of *Ex parte Lemelson*, which appellant uses to equate examiner's rejection of his application, to support is enablement argument, the comparison is a mischaracterization and similar to comparing apples and oranges.

The Board for the cited case disagreed with the examiner's questioning the disclosure with respect to the elements that do not appear in the claimed invention. For example, the examiner considered the disclosure non-enabling for the measurement of the rear of the automobile, which is not in the claims (see page 5, lines 7+ of the Board decision). In appellant's case, the examiner has shown that the claim elements associated with the rejection are either positively recited in the claims or required in order to exercise the claimed method.

The Board also disagreed with the examiner because it appears that the examiner did not provide adequate support for his conclusion that undue experimentation would be required to make and use the invention. In contrast, the instant examiner has provided a detailed explanation and objective evidence why undue experimentation is necessary even before an artisan can exercise his claimed method.

As to appellant's argument b), the issue is not that the algorithms are well known but that undue experimentation is required to select, modify and/or combine algorithms, as demonstrated by the examiner.

As to argument c) appellant alleges that his disclosure is enabling because the level of disclosure provided in his application is the same as those in Akers (U.S. 6,178,218) or Alex (U.S. 4,064,438). The examiner disagrees.

First, the issuance of the cited patents is not dispositive of the issues raised by the current examiner because his issues are different from those raised by another examiner who examined the application for the cited patents.

Second, the Doppler broadening algorithm in Akers (U.S. 6,178,218), is not modified by feed back from the data processing system and/or possibly the positron lifetime algorithm, unlike the instant application.

Third, as to Alex, his technique is completely different from the appellant's. He does not employ any positron lifetime algorithm or Doppler broadening algorithm in his invention to obtain indication of defects in specimens. Rather, the actual radioactivity-related measurements from the samples are compared with previously prepared reference standards. For example, Alex's non-destructive method for detecting hydrogen embrittlement develops energy distribution curves of gamma ray measurements from various classes of known levels of hydrogen embrittlement, to be utilized as reference standards to indicate the stage of unknown embrittlement within a specimen under examination (see col. 3, lines 55+).

As to argument d), again the appellant is mischaracterizing the issue. The examiner is not arguing the number of detectors that are enabled by the specification. The issue is that the lack of enablement for the specific algorithm to apply when using only a single detector, and the undue experimentation resulting therefrom.

As to the traverse of the rejection of claims under 112, 2nd paragraph, appellant's arguments are: a) simply repetitions of items that have been adequately addressed above.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick Palabrica whose telephone number is 571-272-6880. The examiner can normally be reached on 6:00-4:30, Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RJP
January 11, 2007

RICARDO J. PALABRICA
PRIMARY EXAMINER